WHAT IS CLAIMED IS:

1. A method of forming a metal interconnection structure comprising:

forming an inter-layer insulation film on a semiconductor substrate, the inter-layer insulation film containing a bit line contact hole;

forming a plug in the bit line contact hole; and

forming a bit line including a bit line barrier metal formed on the plug and a bit line metal film formed on the barrier metal and the inter-layer insulation film.

2. The method as claimed in claim 1, wherein forming the plug comprises:

depositing a plug barrier metal on the inter-layer insulation film and in the bit line contact hole;

depositing a plug metal film on the plug barrier metal; and

forming the plug constructed of the plug barrier metal and the plug metal film which fill the bit line contact hole by etching the plug barrier metal and the plug metal film.

3. The method as claimed in claim 2, wherein the plug barrier metal is a Ti/TiN film deposited by means of a CVD process.

4. The method as claimed in claim 2, wherein the plug metal film is a tungsten film deposited by means of a CVD process.

5. The method as claimed in claim 2, wherein the plug barrier metal and the plug metal film are etched flat by means of a CMP process to fill the bit line contact hole.

6. The method as claimed in claim 2, wherein the plug barrier metal and the plug metal film are etched flat by means of an etch-back process to fill the bit line contact hole.

7. The method as claimed in claim 1, wherein the step of forming the bit line barrier metal on the plug comprises:

partially etching the plug within the bit line contact hole;

depositing the bit line barrier metal on the inter-layer insulation film and on the plug that is partially etched away; and

etching the bit line barrier metal to be defined on the plug that is partially etched away and within the bit line contact hole.

8. The method as claimed in claim 7, wherein the bit line barrier metal is a TiN film deposited by means of either a CVD process or a sputtering process.

9. The method as claimed in claim 7, wherein etching the bit line barrier metal is accomplished by means of either a CMP process or an etch-back process.

10. The method as claimed in claim 1, wherein the step of forming the bit line barrier metal comprises:

depositing a bit line barrier metal on the inter-layer insulation film and on the plug; and

patterning the bit line barrier metal to be defined on the plug.

11. The method as claimed in claim 10, wherein the bit line barrier metal is a TiN film deposited by means of either a CVD process or a sputtering process.

12. The method as claimed in claim 1, wherein the bit line metal film is made of a tungsten film.

13. The method as claimed in claim 12, wherein the tungsten film is deposited by means of a sputtering process.

14. The method as claimed in claim 1, wherein the bit line further includes a capping layer formed on the bit line metal film.

15. The method as claimed in claim 14, wherein the capping layer is made of a nitride film.

16. The method as claimed in claim 1, wherein a width of the bit line is smaller than a diameter of the bit line contact hole.

17. A method of forming a metal interconnection structure comprising:

forming an inter-layer insulation film on a semiconductor substrate, the inter-layer insulation film containing a bit line contact hole;

forming a plug in the bit line contact hole;

partially etching the plug in the bit line contact hole;

forming a bit line barrier metal to be defined on the plug that has been partially etched; and

forming a bit line on the bit line barrier metal and the inter-layer insulation film.

18. The method as claimed in claim 17, wherein the plug is constructed of a plug barrier metal and a plug metal film that are formed in the bit line contact hole.

19. The method as claimed in claim 18, wherein the plug barrier metal is made of a Ti/TiN film and the plug metal film is made of one of a CVD tungsten film and a sputtered tungsten film.

20. The method as claimed in claim 17, wherein the bit line barrier metal is formed of a TiN film deposited by means of either a CVD process or a sputtering process.

21. The method as claimed in claim 20, wherein the bit line barrier metal is defined on the plug that has been partially etched by being etched through a CMP process to fill the bit line contact hole.

22. The method as claimed in claim 20, wherein the bit line barrier metal is defined on the plug that has been partially etched by being etched through an etch-back process to fill the bit line contact hole.

23. The method as claimed in claim 17, wherein the bit line is made of a sputtered tungsten film.

24. The method of claim 17, wherein a width of the bit line is smaller than a diameter of the bit line contact hole.

25. A method of forming a metal interconnection structure comprising:

forming an inter-layer insulation film on a semiconductor substrate;

forming a bit line contact hole by using a mask to selectively etch the inter-layer insulation film;

forming a plug in the bit line contact hole;

depositing a bit line barrier metal on the plug and the inter-layer insulation film;

etching the bit line barrier metal to be defined on the plug; and

forming a bit line on the bit line barrier metal and the inter-layer insulation film.

26. The method as claimed in claim 25, wherein the plug is constructed of a plug barrier metal formed in the bit line contact hole, and a plug metal film formed on the bit line barrier metal and filling the bit line contact hole.

27. The method as claimed in claim 26, wherein the plug barrier metal is made of a Ti/TiN film and the plug metal film is made of one of a CVD tungsten film and a sputtered tungsten film.

28. The method as claimed in claim 25, wherein the bit line barrier metal is made of one of a sputtered TiN film and a CVD TiN film.

29. The method as claimed in claim 28, wherein the bit line barrier metal is patterned by employing a mask which is the same as that used in forming the bit line contact hole.

30. The method as claimed in claim 25, wherein the bit line is made of a sputtered tungsten film.

31. The method as claimed in claim 25, wherein a width of the bit line is smaller than a diameter of the bit line contact hole.

32. A metal interconnection structure of a semiconductor device comprising:

an inter-layer insulation film formed on a semiconductor substrate, the inter-layer insulation film containing a bit line contact hole;

a plug formed in the contact hole; and

a bit line including a bit line barrier metal defined on the plug within the contact hole, and a bit line metal film formed on the bit line barrier metal and the inter-layer insulation film.

33. The metal interconnection structure as claimed in claim 32, wherein the plug includes:

a plug barrier metal formed in the contact hole; and

a plug metal film formed on the plug barrier metal and partially filling the contact hole.

34. The metal interconnection structure as claimed in claim 33, wherein the plug barrier metal is a CVD Ti/TiN film.

35. The metal interconnection structure as claimed in claim 33, wherein the plug metal film is a CVD tungsten film.

36. The metal interconnection structure as claimed in claim 33, wherein the bit line barrier metal is a TiN film formed on the plug and filling the contact hole.

37. The metal interconnection structure as claimed in claim 32, wherein the plug includes:

a plug barrier metal formed in the contact hole; and

a plug metal film formed on the plug barrier metal and filling the contact hole.

38. The metal interconnection structure as claimed in claim 37, wherein the plug barrier metal is a CVD Ti/TiN film.

39. The metal interconnection structure as claimed in claim 37, wherein the plug metal film is a CVD tungsten film.

40. The metal interconnection structure as claimed in claim 37, wherein the bit line barrier metal is a TiN film formed on the plug.

41. The metal interconnection structure as claimed in claim 32, wherein the bit line metal film is made of a sputtered tungsten film.

42. The metal interconnection structure as claimed in claim 32, wherein the bit line further includes a capping layer formed on the bit line metal film.

43. The metal interconnection structure as claimed in claim 42, wherein the capping layer is made of a nitride film.

44. The method as claimed in claim 32, wherein a width of the bit line is smaller than a diameter of the bit line contact hole.

45. A metal interconnection structure of a semiconductor device, comprising:

an inter-layer insulation film formed on a semiconductor substrate, the inter-layer insulation film containing a bit line contact hole;

a plug partially filling the contact hole;

a bit line barrier metal defined on the plug and filling the rest of the contact hole; and

a bit line formed on the bit line barrier metal and the inter-layer insulation film.

46. The metal interconnection structure as claimed in claim 45, wherein the plug includes:

a plug barrier metal formed in the contact hole; and a plug metal film formed on the plug barrier metal and partially filling the contact hole.

47. The metal interconnection structure as claimed in claim 46, wherein the plug barrier metal is made of a Ti/TiN film and the plug metal film is a CVD tungsten film.

48. The metal interconnection structure as claimed in claim 45, wherein the bit line barrier metal is one of a sputtered TiN film and a CVD TiN film.

49. The metal interconnection structure as claimed in claim 45, wherein the bit line is made of a sputtered tungsten film.

50. The metal interconnection structure as claimed in claim 45, wherein a width of the bit line is smaller than a diameter of the bit line contact hole.

51. A metal interconnection structure of a semiconductor device, comprising:

an inter-layer insulation film formed on a semiconductor substrate, the inter-layer insulation film containing a bit line contact hole;

a plug completely filling the contact hole;

a bit line barrier metal defined on the plug in the contact hole; and a bit line formed on the bit line barrier metal and the inter-layer insulation film.

52. The metal interconnection structure as claimed in claim 51, wherein the plug includes:

a plug barrier metal formed in the contact hole; and

a plug metal film formed on the plug barrier metal and completely filling the contact hole.

53. The metal interconnection structure as claimed in claim 52, wherein the plug barrier metal is made of a Ti/TiN film and the plug metal film is a CVD tungsten film.

54. The metal interconnection structure as claimed in claim 51, wherein the bit line barrier metal is made of one of a sputtered TiN film and a CVD TiN film.

55. The metal interconnection structure as claimed in claim 51, wherein the bit line is made of a sputtered tungsten film.

56. The metal interconnection structure as claimed in claim 51, wherein a width of the bit line is smaller than a diameter of the bit line contact hole.